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through the air, and finds that the structure of the body is such that equilibrium is preserved, and is even recovered if the body is started half way over. Hence these birds, if active, can still often fly reasonably well after the semi-circular canals have been extirpated. But the case is very different with fishes, and they, consequently, exhibit the usual effects of mutilation very perfectly; after total extirpation of the labyrinth on both sides, they swim with complete oblivion of the attitude proper to the fish in water. The author also believes that some fishes at least learn to guide themselves by their labyrinth sense only after some experience. The subject is one of great interest, and this paper is a distinct contribution to our knowledge regarding it.

C. L. F.

THE PHYSIOLOGICAL CONCOMITANTS OF SENSATIONS AND EMOTIONS.

THE first issue of the *Journal of Experimental Medicine* contains an experimental research from the Physiological Laboratory of John Hopkins University by Dr. T. E. Shields on the effects of odors, irritant vapors and mental work upon the blood flow. The author regards his chief results to be improvements in Mosso's plethysmograph. With this instrument changes in the volume of the arm are measured and it is assumed that the blood withdrawn from the arm is called to the brain as a result of mental activity. The apparatus is complicated and Dr. Shields has used great care in eliminating various sources of error. He finds that odors and mental work cause (presumably) congestion of the brain. Even when the volume of the arm is at first increased, this is due to the acceleration of the heart rate, which would also tend to increase the supply of blood to the brain. Dr. Shields' experiments contradict Lehman's view that pleasant sensations decrease the blood sup-

ply to the brain. The article is admirably illustrated.

DR. F. KIESOW, in a paper (*Philos. Studien*, XI., 1) not referred to by Dr. Shields, has used Mosso's new sphygmomanometer for similar purposes. With this instrument the pressure of the blood in two fingers is measured. Strained attention, mental operations, such as multiplying, sudden noises, sudden pains, etc., were used. The results were varied and difficult to interpret. Sometimes there was no alteration in pressure, sometimes there was a decrease, but more commonly an increase. Dr. Kiesow concludes that the alterations are not due to the sensations nor to the attention as such, but to the feelings that accompany them.

IN an extended investigation (*Philos. Studien* XI., 1, 3 and 4) Dr. Paul Mentz has studied the effects of sounds on the pulse and on breathing. A single noise or tone of moderate intensity caused a slower pulse and usually a slower rate of breathing, which the author attributes chiefly to the pleasure accompanying the sensation. If the sounds are intense or long continued the pulse becomes quickened. When music was listened to passively the rate of the pulse was decreased, but it was quickened when the attention was strained.

J. McK. C.

SCIENTIFIC NOTES AND NEWS.

THE ACTION OF THE HOUSE OF REPRESENTATIVES ON THE METRIC BILL.*

THE Hon. C. W. Stone, Chairman of the Committee on Coinage, Weights and Measures, received notice on Tuesday afternoon, April 7th, that he would be given an opportunity to call up at once the Committee's Bill in regard to fixing the standard of weights and measures, according to the Metric System of weights and measures. The hour was late, but Mr. Stone promptly made his argument in favor of the Bill, Mr. Stone's speech was a thorough and

* Based upon the report of the correspondent of the New York Dry Goods Economist.

comprehensive discussion of the proposed change, preceded by a historical sketch of the origin of the system. He quoted the prediction made by the Hon. John A. Kasson in reporting the bill in 1866 to the House, that a subsequent House would make, at a not-distant date, exclusive and compulsory the measures then simply legalized. He cited the strong indorsements which the system has received from the late Secretary Blaine, Postmaster-General Wilson, Secretary Caslisle, The Director of the Mint, the Superintendent of the Coast and Geodetic Survey, etc., and dwelt at some length on the letter of the Hon. J. S. Morton, Secretary of Agriculture. He discussed also the magnitude of our commercial relations with Metric-using countries and showed the ease with which the system had been adopted by different peoples. He cited the British Consular reports, showing Great Britain's loss through retaining her old and awkward systems, and explained the present progress toward the Metric System by the three remaining non-Metric countries, the United States, Great Britain and Russia.

Mr. Stone's speech was very well received, and it was first thought that a vote would be taken without debate. Mr. Bartlett, of New York, however, secured the floor and made a short speech in opposition to the bill. He was followed by Representative Otey, of Virginia, who made a humorous speech against the Metric System, dwelling chiefly upon the Metric terms. Mr. Hurley, of Brooklyn, replied in a dignified manner to Mr. Otey's effort and suggested that in the hands of a humorist our present system could be made very ridiculous. After more discussion Mr. Stone called for a vote, and on a division of the House there were 65 votes in the affirmative and 80 in the negative. The vote being less than a quorum, Mr. Stone succeeded in securing an adjournment, and the fight went over until Wednesday morning, when the yeas and nays were ordered. After the experience of the day before, Mr. Stone was anxious to gain time, believing that it was only necessary to acquaint the members further in regard to the system under more favorable conditions than those of a noisy debate in the House, to secure the passage of the bill; but a vote could not be avoided, and when the an-

nouncement was made that the bill had passed by a vote of 119 to 117 a shout of applause went up from the floor and galleries. Those who had opposed the bill, however, took courage, because of the narrow majority in favor of the bill, and promptly moved a reconsideration. Upon this motion yeas and nays were ordered and the opponents of the bill went vigorously to work to change votes, with the bugaboo of the angry farmer protesting against being tangled up with a new system of weights and measures on the eve of a Congressional election. The result of this work was soon apparent. Mr. Hurley's motion to lay the motion to reconsider on the table was lost by a vote of 136 to 111, and the motion to reconsider prevailed by a vote of 141 to 99. Mr. Stone's only remaining chance was to ask to have the bill re-committed to his Committee. This motion was carried *viva voce*.

After the battle in the House many members who had voted against the bill expressed themselves as not being opposed to it for any reason except that they did not understand it; while others did not hesitate to say that it would be a very easy thing to put through after election. A Western member voiced the sentiment of many of his colleagues in a paraphrase of one of Mr. Otey's witticisms, saying: "If I should talk to my farmers about kilograms they would kill me next November."

The campaign for the introduction of the only enlightened system of weights and measures known to the world will go on unchecked, and sooner or later the United States will follow the other nations of the earth in its adoption.

THE NEW EDINBURGH OBSERVATORY.

The new Royal Observatory at Edinburgh was opened on April 7th by an inaugural ceremony in which Lord Balfour, Lord Crawford and Sir Robert S. Ball took part. Edinburgh has long had a fairly well equipped observatory, but several years ago the Earl of Crawford presented his fine collection of instruments to the observatory, and as there was not room to use these properly a government grant amounting to £36,000 was secured for a new building. The building and its equipment are said to be much superior to any other in Great Britain,

though they do not compare favorably with the great American observatories. According to the description in the London *Times*, the buildings consist of the observatory proper, the official residence of the Astronomer Royal, the residence of the assistant astronomers and subsidiary buildings. The Observatory is a T-shaped building, the head of the T facing the north with a frontage of 180 feet, and having at each end a telescope tower, of which the eastern is 75 feet high and 40 feet in diameter, and the western is 44 feet by 27 feet. The former contains the most important instrument in the observatory—a new refracting telescope of 15-inch aperture. The latter contains the reflecting telescope, removed from the Calton observatory, which has an aperture of 2 feet, and which is to be used in astro-physical researches. From the western tower a sloping gangway leads upwards to the transit house, in which is a telescope of 8½ inch diameter resting on a horizontal axis. Connected with the Observatory, there are a well-equipped photographic laboratory, and a library with accommodation for some 30,000 volumes, which is already well furnished with the Dun Echt collection.

The director of the Observatory is Mr. Ralph Copeland, Astronomer Royal for Scotland and Professor of Astronomy in the University of Edinburgh.

OCCURRENCE OF THE NATIVE WOOD RAT AT WASHINGTON, D. C.

THE Alleghany Wood Rat, *Neotoma pennsylvanica*, inhabits the Alleghany plateau from the mountains of North Carolina to southern New York. In Virginia it is known to occur at several localities in the Blue Ridge Mountains. Recently, in trapping among the rocky cliffs along the west side of the Potomac River, four miles above Washington and a quarter of a mile from the old boundary line of the District of Columbia, I secured five of these rats. They are fairly common at this point, which they doubtless reach by following the river cliffs from Harper's Ferry, where the Potomac cuts through the Blue Ridge. No doubt they come a little farther down, probably to the end of the high ridge opposite Georgetown.

The rats were caught under masses of broken rock and in clefts and caverns in the ledges, where their nests, stick piles and runways may be seen by any one who will take the trouble to look for them.

VERNON BAILEY.

GENERAL.

THE French Association for the Advancement of Science met at Tunis during the first week of the present month. M. Paul Dislère, in his Presidential address, reviewed navigation on the Mediterranean, beginning with ancient Carthage. M. de Bort, the Secretary, according to custom, described the previous meeting at Marseilles, losses by death, and honors conferred on members. M. Galante, the Treasurer, reported receipts for the current year amounting to 99,661 fr. and a reserve fund amounting to 1,190,100 fr. The meeting next year will be at St. Etienne.

THE American Medical Association, in conjunction with the American Academy of Medicine and other associations, meets this year at Atlanta, beginning on May 2d. Many papers and discussions, interesting not only to members of the medical profession, but also to other men of science, are announced.

AN examination of the recently published list of the *Deutsche chemische Gesellschaft* reveals some interesting statistics. Out of 3,020 members, 1,274 are from foreign countries. Of these the United States stand first with 261, and the United Kingdom a close second with 236. Then follows Austria, 175; Switzerland, 145; Russia, 124; France, 76; Holland, 75; Italy, 67, and Sweden, 28. Belgium, South America, Denmark, Japan, Norway, Finland and the East Indies follow with between five and ten; Canada, India, South Africa, Portugal, Roumania, Bulgaria, China, West Indies, Spain, Servia, Greece, Australia, New Zealand, Mexico, East Roumelia, Persia and Palestine are represented, the last four by a single member each. The Society might with justice claim to be international. Turkey is the only country in Europe with no member.

THE *Société Nationale d'Horticulture de France* will hold an international exposition from May 20-25, 1896. During that period an Inter-

national Horticultural Congress will also be held to which the correspondents of the Society are invited to send delegates. Correspondence should be directed to M. Ernest Bergman, Secretary of the Commission for the organization of the Congress, 84 Rue de Frenelle, Paris.

AT the Berlin Industrial Exhibition to be held from the 1st of May to the 15th of October of the present year, there will be an international exhibition of astronomical photographs. Astronomers are requested to send to Dr. F. S. Archenhold, astronomer of the Grunewald Observatory, photographs, drawings of astronomical instruments and other objects suitable to the exposition. Dr. Archenhold will exhibit the new refracting telescope of the Grunewald Observatory, which is said to be the largest in Germany. This has two objectives, one of 170 and one of 110 cm. Instead of the usual dome, this telescope is provided with a cylindrical cover.

IT is announced that Prof. Schafer, of University College, London, is editing a text-book of physiology which will contain contributions by Professors Halliburton, Gamgee, Burdon Sanderson, Gaskell, Langley, Sherrington, McKendrick, Haycraft and others.

THE Swiss National Exhibition, which will be held at Geneva from May 1st to October 15th, will be especially noteworthy for the electrical exhibit, which, it is said, will be the finest ever made. Mr. Theodore Turretine, the Mayor of Geneva and President of the Exposition, is himself an electrical engineer.

THE Natural History Museum of London has acquired by purchase the collection of fossil bird remains from the reputed 'Eocene' beds of Santa Cruz, Patagonia, formed by Dr. F. Ameghino, of La Plata.

THE Pennsylvania Forestry Association held an unusually successful meeting at Philadelphia on April 10th. Addresses were made by Governor Hastings, Mayor Warwick, Provost Harrison, Mr. Fernow and Dr. Rothrock.

THE American Metrological Society is sending out a great many metric charts, pamphlets, petitions, etc., for the purpose of educating the people in regard to the salient points of the metric system, and those who understand the

system are requested to write to their Representatives in Congress, urging them to vote for the Committee's Bill, a copy of which was published in this JOURNAL on March 27th.

IN a speech before the Senate in behalf of the bill providing for an additional fire-proof building for the U. S. National Museum, Senator Morrill stated that while the proposed building would suffice for the present to exhibit the accumulated specimens another and more elaborate building would be ultimately found necessary.

DR. WILLIAM SHARP, F. R. S., died at Llandudno, Wales, on April 10th, being 91 years of age. Dr. Sharp aided in the introduction of the teaching of science in schools and in the establishment of local museums throughout Great Britain. We regret also to record the death of Prof. Justus M. Silliman, for twenty-five years professor of mining engineering at Lafayette College, and of Dr. Charles Human, the German engineer and archæologist.

THE *British Medical Journal* states that the late Dr. W. C. Williamson, professor of botany at Owens College, Manchester, whose collection of specimens has just been purchased by the British Museum, left behind him an autobiography, which Mr. George Redway is about to publish under the title of 'Reminiscences of a Yorkshire Naturalist.'

MR. SEWELL has introduced into the United States Senate a bill providing for the establishment of a military and national park on the Palisades of the Hudson and making a preliminary appropriation of \$500,000 for the purpose. The States of New York and New Jersey have agreed to cede jurisdiction over the Palisades to the United States.

THE French Geographical Society has awarded a gold medal to Dr. Louis Lapique for his voyage along the coast of Beloochistan and in the Persian Gulf, and more especially for his ethnographical researches on the Negritos.

THE *British Medical Journal* states that M. Renier has bequeathed to the Belgian treasury the sum of two million francs, to be applied to the foundation of a medical institute to be called the 'Institut Rommelaere.'

THE first serious treatment of American Mallophaga, or bird lice, is found in a paper just published conjointly by the Leland Stanford University and the California Academy of Sciences. In this paper Prof. V. L. Kellogg gives a table and synopsis of the genera and describes one new genus and 38 new American species, besides identifying 22 species previously described by European authors, but here, with few exceptions, first determined as parasites of American birds. For the first time in any work close attention is paid to immature forms as a contribution toward their almost unknown life history, and about 80 complete figures of bird lice are given, besides others of details of structure or portions of the body. It is sure to stimulate further investigation in a much neglected field.

A SERIOUS landslide is reported to have taken place at Trub, twenty miles east of Berne. A landslide is also said to have taken place at Bondesir, Saguenay county, Quebec.

PROF. W. WUNDT has been elected foreign associate and M. J. Lachelier member of the Paris *Institut* (Academy of Medical and Political Sciences).

THE provisional program of the International Congress of Psychology, to be held at Munich from the 4th to the 7th of August, announces 102 papers, and others will be announced later.

FELIX ALCAN announces as in press *La psychologie des sentiments* by Prof. Ribot and *Les types intellectuels* by Prof. Paulhan.

THE epidemic disease afflicting well meaning but ignorant people and leading them to see visions somewhat similar to those occurring in *delirium tremens* is not confined to America. A memorial with some 12,000 signatures has been presented to the Home Secretary of Great Britain and Ireland, claiming that there is not sufficient inspection under the act relating to vivisection. They state that two licensees had exceeded the rights given them by their certificates.

ON April 5th, the first Sunday that the London National Museums were open to the public, there were 7,138 visitors at South Kensington Museum and 3,026 at Bethnal Green Museum.

DR. LEWIS SWIFT, of Lowe Observatory, California, has discovered a new comet. It is stated

that its position was: Right ascension, 3 hours, 38 minutes and 26 seconds; declination, 18 degrees, 19 minutes, 32 seconds north on April 16th, 0.6896 Greenwich mean time. The comet is moving north at the rate of $2\frac{1}{2}$ degrees per day and very slowly westward. It is about as bright as a seventh magnitude star, and has a decided condensation in its head and a short tail.

DR. CH. WARDELL STILES, of the U. S. Department of Agriculture, has been elected a member of the French Academy of Medicine.

PROF. SEELEY, F. R. S., will begin a summer course of lecture excursions with the London Geological Field Class at the end of April. The subject of the series will be 'The Physical Geography and Geology of the Thames and its Tributaries.' This is the 11th annual course.

THE Boston Aeronautical Society, wishing to circulate its notices and reports, requests all those who are in any way interested in aerial navigation, to place their names on file, addressing the Secretary of the Society, Box 1197, Boston.

THE *Progressive Age* has published a report on experiments carried out by Prof. E. J. Houston and A. E. Kenelly to determine the actual cost of producing carbide of calcium at the works of the Wilson Company, at Spray, N. C.

WE learn from *The Lancet* that the Dean and Faculty of the Medical School of University College, Bristol, having consented to receive and permanently locate the valuable collection of momentos of Edward Jenner, known as the 'Jenner Relics,' it is desired to raise by public subscription the sum of £1,500 in order to defray the cost of purchase from Mr. Frederick Mockler, of Wotton-under-Edge. Each subscriber of one guinea and upwards will receive when the list is complete a silver medal, and to subscribers of not less than half a guinea a bronze medal will be presented, commemorative of the Jenner Centenary, May 14, 1896.

IN the summary report of the Canadian Geological Survey, Mr. Dawson calls attention to the entirely insignificant accommodation afforded by the present building for the work of the Survey. Not only are the offices inade-

quate and inconvenient, but the space available in the museum has become much too restricted, while both offices and museum, with all their valuable accumulations, are subject to danger of loss by fire. The advantage to Canada of having an adequate display of the mineral wealth of the country can scarcely be exaggerated, and that the museum, even in its present state, possesses much interest to the general public, is evidenced by the fact that more than 26,000 visitors have been registered during the year.

UNIVERSITY AND EDUCATIONAL NEWS.

YALE UNIVERSITY receives \$200,000 through the marriage of Mrs. T. C. Sloane. Mr. Sloane had left part of his estate as a trust fund, the above amount to go to Yale University in case of Mrs. Sloane's second marriage.

THE will of the late Ephraim Howe leaves \$40,000 to Tufts college for a new building to be known as the Howe memorial.

THE New York *Evening Post* states that the library of Cornell University has secured, by purchase, through the Sage endowment fund, the extensive collection of works on South America gathered, mainly during an eight years' residence in Brazil, by Herbert H. Smith, of the Brazilian Geological Commission.

IT is understood that Edinburgh University will receive £20,000 from the estate of the Earl of Moray as an endowment fund for the promotion of original research in the University.

THE Senate of the Glasgow University has conferred the degree of D. D. on Prof. Thielton-Dyer and on Prof. Andrew Gray.

THE St. Petersburg Medical Academy has received from the Russian government \$2,500 for experiments with the X-rays.

DISCUSSION AND CORRESPONDENCE.

CERTITUDES AND ILLUSIONS.

EDITOR OF SCIENCE: I am very much afraid that physicists will find themselves utterly unable to follow, or, at least, to understand, Major Powell in his philosophical dissertations on the fundamental concepts of mechanics, and that

they will be compelled to conclude that his philosophy is *not* 'Natural' Philosophy, in the generally accepted sense.

Believing this to be inevitable, it is hardly worth while to continue at any length a discussion or critical examination of the very interesting propositions which he has laid down. It may be of use, however, to invite his attention to the fact that in the answers to my questions relating to 'Rest and Motion,' which he gave in this JOURNAL for April 17th, he continues to ignore entirely the only serious issue raised by them. It can hardly be supposed that Major Powell is undertaking to establish a concept of motion independent of relativity, yet he seems to overlook the necessity of giving it consideration. When, in answer to my question, he defines motion as 'change of position' it only leaves the question where it was before, if not in even greater obscurity. 'Position' implies a relation; then motion implies a relation and cannot be predicated of any one of Major Powell's several orders of units.

His statement that "the speed of a particle is constant in reference to itself at different times" is meaningless, if the commonly accepted idea of motion is correct. If it is not correct, and that of Major Powell is, then—the bottom has dropped out.

As to his suggested correction of a typographical error in his previous statement relating to the velocity of light, if *molar* be substituted for *molecular* in that statement, it remains quite as astounding as before. I mention this only that he may note that apparently he has not detected the real absurdity involved. M.

APRIL 19, 1896.

IS THERE MORE THAN ONE KIND OF KNOWLEDGE?

"My praise shall be dedicated to the mind itself. The mind is the man, and the knowledge of the mind. A man is but what he knoweth. The mind itself is but an accident to knowledge, for knowledge is a double of that which is. The truth of being and the truth of knowing is all one."—*Praise of knowledge.*

I am pleased to find in the current number of SCIENCE (April 3, 1896), that after seven months